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NEWS	3	Oct 27	New Extraction Code PAX now available in Derwent Files
NEWS	4	Oct 27	SET ABBREVIATIONS and SET PLURALS extended in Derwent World Patents Index files
NEWS	5	Oct 27	Patent Assignee Code Dictionary now available in Derwent Patent Files
NEWS	6	Oct 27	Plasdoc Key Serials Dictionary and Echoing added to Derwent Subscriber Files WPIDS and WPIX
NEWS	7	Nov 29	Derwent announces further increase in updates for DWPI
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=> s geminivirus or gemini virus

L1 3600 GEMINIVIRUS OR GEMINI VIRUS

=> s L1 and agrobacter? or agroinoculat? or transfor?

L2 1272166 L1 AND AGROBACTER? OR AGROINOCULAT? OR TRANSFOR?

=> s L1 and (agrobacter? or agroinoculat? or transfor?)

L3 565 L1 AND (AGROBACTER? OR AGROINOCULAT? OR TRANSFOR?)

=> L3 and (neomy? or kana?)

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=> s L3 and (neomy? or kana?)

L4 26 L3 AND (NEOMY? OR KANA?)

=> d ibib abs l4 1-10

L4 ANSWER 1 OF 26 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 2000:277065 CAPLUS
DOCUMENT NUMBER: 133:14741
TITLE: Regulation of tomato leaf curl viral gene expression in host tissues
AUTHOR(S): Dry, Ian; Krake, Les; Mullineaux, Phil; Rezaian, Ali
CORPORATE SOURCE: Horticulture Unit, CSIRO Plant Industry, Glen Osmond, 5064, Australia
SOURCE: Mol. Plant-Microbe Interact. (2000), 13(5), 529-537
CODEN: MPMIEL; ISSN: 0894-0282
PUBLISHER: APS Press
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The regulation of expression of the two virion-sense (V1 and V2) and four complementary-sense (C1, C2, C3, and C4) open reading frames (ORFs) of Tomato leaf curl virus (TLCV) was studied in both stably and transiently **transformed** Nicotiana tabacum tissues with fusions with the .beta.-glucuronidase (GUS) reporter gene. GUS-expressing transgenic lines were obtained with each of the four complementary-sense gene-GUS fusion constructs and with truncated versions of the virion-sense gene-GUS fusion constructs (V1GUS.DELTA.C and V2GUS.DELTA.C) lacking complementary-sense sequences encoding the C1, C2, and C3 ORFs. However, little or no GUS expression was obsd. in **kanamycin**-resistant plants **transformed** with full-length, virion-sense gene constructs (V1GUS and V2GUS) constituting the complete viral genome. In contrast, V1GUS and V2GUS were found to direct high-level GUS expression in transient assays

with tobacco protoplasts, suggesting that integration of viral constructs contg. functional, complementary-sense genes may lead to repression or deletion of the introduced constructs in transgenic tissues. V2GUS expression in the transient protoplast assay was found to be severely curtailed by specific mutation of the C2 ORF, supporting a role for the C2 protein in transactivation of TLCV virion-sense gene expression. TLCV ORF-GUS constructs displayed distinctive tissue expression patterns in transgenic tobacco plants that could be divided into constitutive (C1, C4, and V2GUS.DELTA.C), predominantly vascular (C2, C3), or reduced expression in cells assocd. with the vascular bundles (V1GUS.DELTA.C). The significance of these results is discussed in terms of current models of gene function and regulation in **geminiviruses**.

REFERENCE COUNT: 31
REFERENCE(S):
(1) Aryan, A; Mol Gen Genet 1991, V225, P65 CAPLUS
(2) Bendahmane, M; Plant Mol Biol 1997, V33, P351 CAPLUS
(3) Brough, C; Virology 1992, V187, P1 CAPLUS
(4) Dry, I; J Gen Virol 1993, V74, P147 CAPLUS
(5) Dry, I; Proc Natl Acad Sci USA 1997, V94, P7088 CAPLUS
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 2 OF 26 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1997:214616 CAPLUS
DOCUMENT NUMBER: 126:207952
TITLE: Direct gene transfer to tall fescue (Festuca arundinacea Schreb.) by particle bombardment
AUTHOR(S): Takamizo, T.; Hagio, T.; Fujimori, M.; Ugaki, M.; Hirabayashi, T.
CORPORATE SOURCE: Lab. Biotechnology, National Grassland Research Institute, Tochigi, 329-27, Japan
SOURCE: Acta Hortic. (1995), 392(Genetic Improvement of Horticultural Crops by Biotechnology), 187-192
CODEN: AHORA2; ISSN: 0567-7572
PUBLISHER: International Society for Horticultural Science
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Tall fescue (Festuca arundinacea Schreb.) suspension culture cells were bombarded by the particle gun with plasmids carrying the .beta.-glucuronidase (GUS) reporter gene. Various parameters affecting transient GUS expression were investigated. As for microcarrier, tungsten was found to be superior to gold, when 1.6.mu. particles were used. A bombardment pressure of 1300psi was superior to one of 1100psi. Tall fescue suspension culture showed higher GUS expression levels than meadow fescue and Italian ryegrass suspension cells. High expression levels were obsd. with improved constructs originating from a **Geminivirus** -derived vector or contg. intron or leader sequences. Tall fescue suspension culture cells were also bombarded with the **Geminivirus** -derived constructs (pWI-K6) carrying the **Neomycin** phosphotransferase II gene (NPT II). Putative **transformed** calli were obtained by selecting the bombarded cells on MS medium supplemented with 50 mg/L Geneticin.

L4 ANSWER 3 OF 26 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1994:623670 CAPLUS
DOCUMENT NUMBER: 121:223670
TITLE: **Geminivirus**-based gene expression system for plant
INVENTOR(S): Kridl, Jean C.; Knauf, Vic C.; Bruening, George
PATENT ASSIGNEE(S): Calgene Inc., USA; University of California
SOURCE: PCT Int. Appl., 30 pp.

CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9419477	A1	19940901	WO 1994-US2255	19940223
W: CA, JP				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
US 5650303	A	19970722	US 1993-24164	19930226
CA 2156720	AA	19940901	CA 1994-2156720	19940223
EP 686197	A1	19951213	EP 1994-910807	19940223
EP 686197	B1	20000607		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, MC, NL, PT, SE				
JP 08509860	T2	19961022	JP 1994-519347	19940223
AT 193729	E	20000615	AT 1994-910807	19940223
ES 2148323	T3	20001016	ES 1994-910807	19940223
US 5589379	A	19961231	US 1994-248859	19940523
PRIORITY APPLN. INFO.:			US 1993-24164	19930226
			US 1993-42103	19930402
			WO 1994-US2255	19940223

AB A **geminivirus**-based vector system for controlled expression of a gene in transgenic plant cells is disclosed. A binary expression vector based on African cassava mosaic virus (ACMV) was constructed; which vector contains the viral transactivating factor AC2 under the control of the ACP regulatory element, a C12-specific thioesterase from bay laurel under the control of the viral coat protein regulatory elements, and a **kanamycin** resistance gene under the control of the CaMV 35s promoter. The binary vector can be **transformed** into **Agrobacterium** tumefaciens and used to produce transgenic Brassica plants.

L4 ANSWER 4 OF 26 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1993:53254 CAPLUS
DOCUMENT NUMBER: 118:53254
TITLE: Tobacco lines with high copy number of replicating recombinant **geminivirus** vectors after biolistic DNA delivery
AUTHOR(S): Kanevski, Ivan F.; Thakur, Sanjay; Cosowsky, Laurey; Sunter, Garry; Brough, Clare; Bisaro, David; Maliga, Pal
CORPORATE SOURCE: Waksman Inst., Rutgers, State Univ. New Jersey, Piscataway, NJ, 08855-0759, USA
SOURCE: Plant J. (1992), 2(4), 457-63
CODEN: PLJUED
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The feasibility of obtaining clonal lines with replicating, multicopy **geminivirus** vectors by direct DNA **transformation** of cultured tobacco cells was studied. The replicating vectors pTGA32 and pST31 are based on the tomato golden mosaic virus (TGMV) A genome and encode the **neomycin** phosphotransferase type II (NPT-II) enzyme that confers **kanamycin** resistance to plant cells. Following introduction into plant cells, unit-length viral genomes were released from the tandem repeats and replicated. In protoplasts, replication of unit-length pTGA32 and pST31 was about as efficient as replication of unit-length DNA A from plasmid pTGA26, which contains 1.5 copies of wild-type DNA A. Tobacco suspension culture cells were bombarded with the recombinant DNA A constructs and selected for **kanamycin** resistance. The no. of **kanamycin**-resistant clones per

bombardment was about the same when the TGMV DNA A vectors or a non-replicating plasmid (pLC14) which also encodes NPT-II was used. Replicating, unit-length DNA A in up to approx. 1000 copies per cell was found in about 10% of the **kanamycin**-resistant clones selected following bombardment of cells with TGMV vectors. The results suggest that **geminiviruses** may serve as useful multicopy vectors in cultured cells.

L4 ANSWER 5 OF 26 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1991:466067 CAPLUS
DOCUMENT NUMBER: 115:66067
TITLE: Wheat dwarf virus vectors replicate and express foreign genes in cells of monocotyledonous plants
AUTHOR(S): Matzeit, Volker; Schaefer, Sabine; Kammann, Matthias; Schalk, Hans Joachim; Schell, Jeff; Gronenborn, Bruno
CORPORATE SOURCE: Abt. Genet. Grundlagen Pflanzenzuechtung, Max-Planck-Inst. Zuechtungsforsch., Cologne, D-5000/30, Fed. Rep. Ger.
SOURCE: Plant Cell (1991), 3(3), 247-58
CODEN: PLCEEW; ISSN: 1040-4651
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Wheat dwarf virus (WDV) is a **geminivirus** that infects monocotyledonous plants. To exploit the potential of WDV as a replicative gene vector, a transient replication and expression system based on the transfection of protoplasts derived from Triticum monococcum suspension culture cells was developed. Cloned genomic copies of various WDV isolates as well as mutants constructed in vitro were introduced into the protoplasts and assayed for their ability to replicate. As a result, regions of the WDV genome necessary or dispensable for the viral DNA replication could be defined. In addn., the gene encoding the viral capsid protein was replaced by 3 different bacterial marker genes, **neomycin** phosphotransferase, chloramphenicol acetyltransferase, and .beta.-galactosidase. The .beta.-galactosidase gene doubled the size of the WDV genome. The replication of the recombinant WDV genomes and the expression of these genes were monitored in suspension culture cells of T. monococcum. The potential of replicative expression vectors based on the WDV genome is discussed.

L4 ANSWER 6 OF 26 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1991:116306 CAPLUS
DOCUMENT NUMBER: 114:116306
TITLE: Replication of a **geminivirus** derived shuttle vector in maize endosperm cells
AUTHOR(S): Ugaki, Masashi; Ueda, Takashi; Timmermans, Marja C. P.; Vieira, Jeffrey; Elliston, Keith O.; Messing, Joachim
CORPORATE SOURCE: Waksman Inst., Rutgers, State Univ., Piscataway, NJ, 08855-0759, USA
SOURCE: Nucleic Acids Res. (1991), 19(2), 371-7
CODEN: NARHAD; ISSN: 0305-1048
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A maize (Zea mays) endosperm cell culture has been shown to efficiently replicate DNA sequences derived from wheat dwarf virus (WDV), a monopartite monocot **geminivirus**. To analyze sequences necessary for viral replication and to verify their application for a plant gene expression vector, a 3.7 kilobase pairs Escherichia coli-plant cell shuttle vector, pWI-11 was developed. The p15A origin of replication, functional in E. coli, was introduced into the viral sequences. The coding region of the coat protein gene was replaced by that of bacterial **neomycin** phosphotransferae II (NPT II) gene. The resulting NPT II gene fusion can serve as a selectable marker in both plant and E. coli

systems. Into a unique cloning site in this pWI-11 vector, a gene fusion carrying the bacterial .beta.-glucuronidase (GUS) coding region under control of the cauliflower mosaic virus 35S (CaMV35S) gene promoter and terminator was introduced. By transferring these viral sequences into protoplasts derived from maize endosperm cell cultures, it was demonstrated that the plasmid pWI-11 can replicate in maize endosperm cells, that the GUS reporter gene introduced into pWI-11 can be expressed at high level in the **transformed** cells, and that the replicating viral DNA can be rescued from endosperm cells by **transforming** E. coli in the presence of **kanamycin**. The level of GUS gene expression increased progressively in **transformed** endosperm cells during a prolonged culture period, coinciding with replication of the viral sequences in these cells.

L4 ANSWER 7 OF 26 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1990:453640 CAPLUS
DOCUMENT NUMBER: 113:53640
TITLE: Expression of engineered wheat dwarf virus in seed-derived embryos
AUTHOR(S): Toepfer, R.; Gronenborn, B.; Schaefer, S.; Schell, J.; Steinbiss, H. H.
CORPORATE SOURCE: Max-Planck-Inst. Zuechtungsforsch., Abt. Genet. Grundlagen Pflanzenzuechtg., Cologne, D-5000/30, Fed. Rep. Ger.
SOURCE: Physiol. Plant. (1990), 79(1), 158-62
CODEN: PHPLAI; ISSN: 0031-9317
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Delivery of DNA into dry and viable embryos of wheat by imbibition in DNA soln. was detected by monitoring the transient expression of chimeric genes. The gene expression vectors used comprise of a **neomycin** phosphotransferase II (NPTII) reporter gene, under the control of various promoters or as part of a cloned plant virus genome. The genome of wheat dwarf virus (WDV), a monopartite **Gemini virus** of gramineae, has been used to amplify the NPT II gene in embryos of wheat, thereby leading to high levels of transient expression. Constructions were designed which permitted NPT II expression only if inter- or intramol. recombination had occurred.

L4 ANSWER 8 OF 26 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1990:49744 CAPLUS
DOCUMENT NUMBER: 112:49744
TITLE: Uptake and transient expression of chimeric genes in seed-derived embryos
AUTHOR(S): Toepfer, Reinhard; Gronenborn, Bruno; Schell, Jeff; Steinbiss, Hans Henning
CORPORATE SOURCE: Abt. Genet. Grundlagen Pflanzenzuecht., Max-Planck-Inst. Zuechtungsforsch., Cologne, D-5000/30, Fed. Rep. Ger.
SOURCE: Plant Cell (1989), 1(1), 133-9
CODEN: PLCEEW; ISSN: 1040-4651
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Uptake of DNA in dry and viable embryos of wheat by imbibition in DNA soln. was detected by monitoring the transient expression of chimeric genes. Gene expression vectors used in this study contained a **neomycin** phosphotransferase (NPT) II reporter gene fused to various promoters. Some of the chimeric neo genes yielded NPT II activity in germinating embryos. This NPT II activity was increased markedly when the neo genes were carried by a vector capable of autonomous replication. Dimers of wheat dwarf virus, a monopartite **gemini virus**, were thus shown to be effective in amplifying the transient expressed NPT II activity in embryos of several cereals. These and other observations indicate that the obsd. transient expression really results

from DNA uptake and expression in plant embryo cells and is not due to contaminating microorganisms.

L4 ANSWER 9 OF 26 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1989:207183 CAPLUS
DOCUMENT NUMBER: 110:207183
TITLE: Stability and expression of bacterial genes in replicating **geminivirus** vectors in plants
AUTHOR(S): Hayes, R. J.; Coutts, R. H. A.; Buck, K. W.
CORPORATE SOURCE: Dep. Pure Appl. Biol., Imp. Coll. Sci., Technol. Med., London, SW7 2BB, UK
SOURCE: Nucleic Acids Res. (1989), 17(7), 2391-403
CODEN: NARHAD; ISSN: 0305-1048
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Bacterial beta-glucuronidase (gus) and **neomycin** phosphotransferase (neo) genes were introduced into coat protein replacement vectors based on DNA A of tomato golden mosaic virus (TGMV). Recombinant gus and neo vectors up to 1.1 kbp larger than DNA A were shown to replicate stably in transgenic plants contg. partial dimers (master copies) of the vectors integrated into their chromosomal DNA in the absence of DNA B. Beta-glucuronidase and **neomycin** phosphotransferase activities in independently **transformed** plants were proportional to the copy no. of the double-stranded forms of the vector. Deletion anal. has shown that an essential part of the TGMV coat protein promoter, including a TATA box, lies within 76 nt upstream of the initiation codon of the gene. An increase in expression of a neo gene was obtained by replacing this 76 nt sequence by an 800 nt sequence contg. a cauliflower mosaic virus 35S RNA promoter with no effect on the ability of the vector to replicate or on its stability in transgenic plants. Systemic infection of plants by **agroinoculation** with TGMV vectors larger than DNA A in the presence of DNA B resulted in deletions in the vector DNA in some, but not all, plants. Possible reasons for vector instability in systemically infected plants, and vector stability in transgenic plants contg. master copies of the vector, are discussed.

L4 ANSWER 10 OF 26 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1988:487439 CAPLUS
DOCUMENT NUMBER: 109:87439
TITLE: Gene amplification and expression in plants by a replicating **geminivirus** vector
AUTHOR(S): Hayes, R. J.; Petty, I. T. D.; Coutts, R. H. A.; Buck, K. W.
CORPORATE SOURCE: Dep. Pure Appl. Biol., Imp. Coll. Sci. Technol., London, SW7 2BB, UK
SOURCE: Nature (London) (1988), 334(6178), 179-82
CODEN: NATUAS; ISSN: 0028-0836
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Gemini tomato golden mosaic virus-derived vectors were used to introduce the **neomycin** phosphotransferase gene (neo) into tobacco plants. A chimeric DNA was constructed in which most of the coat protein gene was deleted and replaced with the neo gene from transposon Tn5. **Agrobacterium**-Mediated inoculation was used to infect tobacco plants with the chimeric DNA. The neo gene was amplified and expressed in the plants. The neo gene copy no. per amphidiploid genome varied from 7 to 490, depending on the transgenic host and gene vector used. Thus, **geminivirus**-derived vectors should be useful not only for amplification of gene expression by the systemic infection of plants, but

also for heritable gene amplification by the integration of stable master copies of the vector into the plant chromosomal DNA.

=> d ibib abs l4 11-26

L4 ANSWER 11 OF 26 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1987:510441 CAPLUS
DOCUMENT NUMBER: 107:110441
TITLE: Construction and use of **geminivirus** DNA-containing vectors for expression of heterologous genes in plants
INVENTOR(S): Rogers, Stephen Gary; Brand, Leslie Ann; Elmer, James Scott; Fraley, Robert Thomas; Horsch, Robert Bruce; Bisaro, David Matthew
PATENT ASSIGNEE(S): Monsanto Co. , USA
SOURCE: Eur. Pat. Appl., 64 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 221044	A1	19870506	EP 1986-870152	19861023
EP 221044	B1	19920902		
R: AT, BE, CH, DE, FR, GB, IT, LI, LU, NL, SE				
AT 80182	E	19920915	AT 1986-870152	19861023
AU 8664380	A1	19870430	AU 1986-64380	19861024
AU 599609	B2	19900726		
JP 62175187	A2	19870731	JP 1986-253509	19861024
ZA 8608126	A	19870826	ZA 1986-8126	19861024
US 6147278	A	20001114	US 1999-261770	19990303
PRIORITY APPLN. INFO.:			US 1985-791249	19851025
			US 1986-899270	19860826
			EP 1986-870152	19861023
			US 1991-711576	19910531
			US 1998-209239	19980626

AB Novel plant vectors contg. **geminivirus** DNA [e.g. tomato golden mosaic virus (TGMV) coat protein gene] and a heterologous DNA sequence are constructed and used to **transform** plants. When introduced into the plant cell, e.g. as free DNA or within an **Agrobacterium** tumefaciens Ti plasmid, these vectors produce autonomously replicating plasmids of increased copy no. which express the heterologous gene without causing disease symptoms. Leaf disks from petunia were submerged in a culture of A. tumefaciens contg. a pTi helper plasmid and pMON354, a plasmid comprising TGMV-A DNA, an ampicillin resistance gene, and the CaMV 35S promoter and dihydrofolate reductase gene. After growth under carbenicillin and methotrexate selection, a Southern blot anal. of the plant DNA indicated the presence of a freely replicating, double-stranded, supercoiled plasmid DNA of the appropriate size. These and other expts. indicated that .gtoreq.4.3 kb of heterologous DNA could be inserted within **geminivirus** DNA without affecting replication and/or expression of the gene, and that the TGMV DNA itself was not necessary for plasmid formation, i.e. any directly repeating DNA of sufficient length and homol. will suffice.

L4 ANSWER 12 OF 26 BIOSIS COPYRIGHT 2000 BIOSIS

ACCESSION NUMBER: 2000:229843 BIOSIS
DOCUMENT NUMBER: PREV200000229843
TITLE: Regulation of Tomato leaf curl viral gene expression in host tissues.
AUTHOR(S): Dry, Ian (1); Krake, Les; Mullineaux, Phil; Rezaian, Ali
CORPORATE SOURCE: (1) Horticulture Unit, CSIRO Plant Industry, Glen Osmond, SA, 5064 Australia
SOURCE: Molecular Plant-Microbe Interactions, (May, 2000) Vol. 13, No. 5, pp. 529-537.
ISSN: 0894-0282.
DOCUMENT TYPE: Article
LANGUAGE: English
SUMMARY LANGUAGE: English

AB The regulation of expression of the two virion-sense (V1 and V2) and four complementary-sense (C1, C2, C3, and C4) open reading frames (ORFs) of Tomato leaf curl virus (TLCV) was studied in both stably and transiently **transformed** Nicotiana tabacum tissues with fusions with the beta-glucuronidase (GUS) reporter gene. GUS-expressing transgenic lines were obtained with each of the four complementary-sense gene-GUS fusion constructs and with truncated versions of the virion-sense gene-GUS fusion constructs (V1GUSDELTAC and V2GUSDELTAC) lacking complementary-sense sequences encoding the C1, C2, and C3 ORFs. However, little or no GUS expression was observed in **kanamycin**-resistant plants **transformed** with full-length, virion-sense gene constructs (V1GUS and V2GUS) constituting the complete viral genome. In contrast, V1GUS and V2GUS were found to direct high-level GUS expression in transient assays with tobacco protoplasts, suggesting that integration of viral constructs containing functional, complementary-sense genes may lead to repression or deletion of the introduced constructs in transgenic tissues. V2GUS expression in the transient protoplast assay was found to be severely curtailed by specific mutation of the C2 ORF, supporting a role for the C2 protein in transactivation of TLCV virion-sense gene expression. TLCV ORF-GUS constructs displayed distinctive tissue expression patterns in transgenic tobacco plants that could be divided into constitutive (C1, C4, and V2GUSDELTAC), predominantly vascular (C2, C3), or reduced expression in cells associated with the vascular bundles (V1GUSDELTAC). The significance of these results is discussed in terms of current models of gene function and regulation in **geminiviruses**.

L4 ANSWER 13 OF 26 BIOSIS COPYRIGHT 2000 BIOSIS
ACCESSION NUMBER: 1994:256146 BIOSIS
DOCUMENT NUMBER: PREV199497269146
TITLE: Simultaneous regulation of tomato golden mosaic virus coat protein and AL1 gene expression: Expression of the AL4 gene may contribute to suppression of the AL1 gene.
AUTHOR(S): Groning, B. R.; Hayes, R. J.; Buck, K. W.
CORPORATE SOURCE: Dep. Biol., Imperial Coll. Sci., Technology Medicine, Prince Consort Road, London SW7 2BB UK
SOURCE: Journal of General Virology, (1994) Vol. 75, No. 4, pp. 721-726.
ISSN: 0022-1317.
DOCUMENT TYPE: Article
LANGUAGE: English

AB The tomato golden mosaic virus (TGMV) coat protein and AL1 genes are located in opposite directions on either side of an intergenic region. To enable the effects of the AL1, AL2 and AL3 gene products on expression of the coat protein and AL1 genes to be studied simultaneously, a plasmid was constructed, containing the intergenic region linked on one side to a 5'-terminal portion of the AL1 gene fused to a beta-glucuronidase (GUS) reporter gene (to replace most of the AL1 gene) and on the other side to a

neomycin phosphotransferase (NEO) reporter gene (to replace the coat protein gene). This GUS-NEO plasmid was mixed with plant expression plasmids containing the AL1, AL2 or AL3 coding regions, the DNA was **transformed** into Nicotiana benthamiana protoplasts and GUS activities and NEO protein levels were measured. Control **transformations** were carried out with the GUS-NEO plasmid mixed with the AL1, AL2 or AL3 plasmids in which mutations were introduced to prevent translation of the open reading frames (ORFs). The results showed that transactivation of the coat protein gene by the AL2 gene product and suppression of the AL1 gene by the expression of AL1 DNA (both reported previously) can occur simultaneously. It was also shown that expression of AL4, a small ORF contained within AL1 DNA but in a different reading frame, as well as expression of ORF AL1, can cause significant suppression of AL1 gene expression. Neither the AL1 nor the AL3 gene products affected the expression of the coat protein gene.

L4 ANSWER 14 OF 26 BIOSIS COPYRIGHT 2000 BIOSIS

ACCESSION NUMBER: 1991:276739 BIOSIS
DOCUMENT NUMBER: BA92:9354
TITLE: WHEAT DWARF VIRUS VECTORS REPLICATE AND EXPRESS FOREIGN GENES IN CELLS OF MONOCOTYLEDONOUS PLANTS.
AUTHOR(S): MATZEIT V; SCHAEFER S; KAMMANN M; SCHALK H-J; SCHELL J; GRONENBORN B
CORPORATE SOURCE: MAX-PLANCK-INST. ZUECHTUNGSFORSCHUNG, ABT. GENETISCHE GRUNDLAGEN, PFLANZENZUECHTUNG, CARL-VON-LINNE-WEG 10, D-5000 KOELN 30, W. GER.
SOURCE: PLANT CELL, (1991) 3 (3), 247-258.
CODEN: PLCEEW. ISSN: 1040-4651.
FILE SEGMENT: BA; OLD
LANGUAGE: English

AB Wheat dwarf virus (WDV) is a **geminivirus** that infects monocotyledonous plants. To exploit the potential of WDV as a replicative gene vector, we developed a transient replication and expression system based on the transfection of protoplasts derived from Triticum monococcum suspension culture cells. Cloned genomic copies of various WDV isolates as well as mutants constructed in vitro were introduced into the protoplasts and assayed for their ability to replicate. As a result, regions of the WDV genome necessary or dispensable for the viral DNA replication could be defined. In addition, the gene encoding the viral capsid protein was replaced by three different bacterial marker genes, **neomycin** phosphotransferase, chloramphenicol acetyltransferase, and .beta.-galactosidase. The .beta.-galactosidase gene doubled the size of the WDV genome. The replication of the recombinant WDV genomes and the expression of these genes were monitored in suspension culture cells of T. monococcum. The potential of replicative expression vectors based on the WDV genome is discussed.

L4 ANSWER 15 OF 26 BIOSIS COPYRIGHT 2000 BIOSIS

ACCESSION NUMBER: 1991:159166 BIOSIS
DOCUMENT NUMBER: BA91:84966
TITLE: REPLICATION OF A **GEMINIVIRUS** DERIVED SHUTTLE VECTOR IN MAIZE ENDOSPERM CELLS.
AUTHOR(S): UGAKI M; UEDA T; TIMMERMANS M C P; VIEIRA J; ELLISTON K O; MESSING J
CORPORATE SOURCE: WAKSMAN INST., RUTGERS, STATE UNIV. N.J., P.O. BOX 759, PISCATAWAY, N. J. 08855-0759, USA.
SOURCE: NUCLEIC ACIDS RES, (1991) 19 (2), 371-378.
CODEN: NARHAD. ISSN: 0305-1048.
FILE SEGMENT: BA; OLD
LANGUAGE: English

AB A maize (Zea mays L.) endosperm cell culture has been shown to efficiently replicate DNA sequences derived from wheat dwarf virus (WDV), a monopartite monocot **geminivirus**. To analyze sequences necessary for viral replication and to verify their application for a plant gene expression vector, we have developed a 3.7 kilobase pairs Escherichia coli-plant cell shuttle vector, pWI-11. The p15A origin of replication, functional in E. coli, was introduced into the viral sequences. We have replaced the coding region of the coat protein gene by that of bacterial **neomycin** phosphotransferase II (NPT II) gene. The resulting NPT II gene fusion can serve as a selectable marker in both plant and E. coli systems. Into a unique cloning site in this pWI-11 vector, we introduced a gene fusion carrying the bacterial .beta.-glucuronidase (GUS) coding region under control of the cauliflower mosaic virus 35S (CaMV35S) gene promoter and terminator. By transferring these viral sequences into protoplasts derived from maize endosperm cell cultures, we have demonstrated that the plasmid pWI-11 can replicate in maize endosperm cells, that the GUS reporter gene introduced into pWI-11 can be expressed at high level in the **transformed** cells, and that the replicating viral DNA can be rescued from endosperm cells by **transforming** E. coli in the presence of **kanamycin**. The level of GUS gene expression increased progressively in **transformed** endosperm cells during a prolonged culture period, coinciding with replication of the viral sequences in these cells.

L4 ANSWER 16 OF 26 BIOSIS COPYRIGHT 2000 BIOSIS
ACCESSION NUMBER: 1990:131953 BIOSIS
DOCUMENT NUMBER: BA89:70764
TITLE: EXTRACHROMOSOMAL FORMS OF CLV DNA1 IN TRANSGENIC PLANTS ARE INHERITED BY SYMPTOM-FREE PROGENY.
AUTHOR(S): MEYER P; NIEDENHOF I; HEIDMANN I; SAEDLER H
CORPORATE SOURCE: MAX-DELBRUECK-LAB. MPG, CARL-VON-LINNE WEG 10 D-5000 KOELN 30, FRG.
SOURCE: PLANT SCI (SHANNON), (1989) 65 (2), 207-216.
CODEN: PLSCE4. ISSN: 0168-9452.
FILE SEGMENT: BA; OLD
LANGUAGE: English
AB Two full length copies of Cassava latent virus (CLV) DNA1 were cloned in head to tail arrangement on a plant expression vector to evaluate the potential of CLV for the development of an extrachromasomal vector system in plants. After direct transfer of the plasmid into protoplasts of Nicotiana tabacum cv. Petit Havana SR1 extrachromosomal single-stranded (ss) and double-stranded (ds) forms of DNA1 appeared after the first cell division of protoplasts. The extrachromosomal copies could also be detected within **transformants** which has been regenerated from **kanamycin**-resistant calli. The CLV-harbouring **transformants** do not display any symptoms usually observed after CLV infection. Stable conservation of extrachromosomal DNA1 was observed in F1 plants derived from self-pollination and in plants regenerated from protoplasts of **transformants**. Our data show that dimer constructs of CLV DNA1 are atractive candidates for an extrachromasomal plant vector system.

L4 ANSWER 17 OF 26 BIOSIS COPYRIGHT 2000 BIOSIS
ACCESSION NUMBER: 1989:268221 BIOSIS
DOCUMENT NUMBER: BA88:4303
TITLE: STABILITY AND EXPRESSION OF BACTERIAL GENES IN REPLICATING **GEMINIVIRUS** VECTORS IN PLANTS.
AUTHOR(S): HAYES R J; COUTTS R H A; BUCK K W
CORPORATE SOURCE: DEP. PURE APPLIED BIOL., IMPERIAL COLL. SCI. TECHNOL. MED., LONDON SW7 2BB, UK.
SOURCE: NUCLEIC ACIDS RES, (1989) 17 (7), 2391-2404.
CODEN: NARHAD. ISSN: 0305-1048.

FILE SEGMENT: BA; OLD
LANGUAGE: English
AB Bacterial beta-glucuronidase (gus) and **neomycin** phosphotransferase (neo) genes were introduced into coat protein replacement vectors based on DNA A of tomato golden mosaic virus (TGMV). Recombinant gus and neo vectors up to 1.1 kbp larger than DNA A were shown to replicate stably in transgenic plants containing partial dimers (master copies) of the vectors integrated into their chromosomal DNA in the absence of DNA B. Beta-glucuronidase and **neomycin** phosphotransferase activities in independently **transformed** plants were proportional to the copy number of the double-standed forms of the vector. Deletion analysis has shown that an essential part of the TGMV coat protein promoter, including a TATA box, lies within 76 nt upstream of the initiation codon of the gene. An increase in expression of a neo gene was obtaind by replacing this 76 nt sequence by an 800 nt sequence containing a cauliflower mosaic virus 35S RNA promoter with no effect on the ability of the vector to replicate or on its stability in transgenic plants. Systemic infection of plants by **agroinoculation** with TGMV vectors larger than DNA A in the presence of DNA B resulted in deletions in the vector DNA in some, but not all, plants. Possible reasons for vector instability in systemically infected plants, and vector stability in transgenic plants containing master copies of the vector, are dicussed.

L4 ANSWER 18 OF 26 MEDLINE
ACCESSION NUMBER: 2000255036 MEDLINE
DOCUMENT NUMBER: 20255036
TITLE: Regulation of tomato leaf curl viral gene expression in host tissues.
AUTHOR: Dry I; Krake L; Mullineaux P; Rezaian A
CORPORATE SOURCE: CSIRO Plant Industry, Horticulture Unit, Glen Osmond SA, Australia.. ian.dry@pi.csiro.au
SOURCE: MOLECULAR PLANT-MICROBE INTERACTIONS, (2000 May) 13 (5) 529-37.
Journal code: A9P. ISSN: 0894-0282.
PUB. COUNTRY: United States
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200009
ENTRY WEEK: 20000901
AB The regulation of expression of the two virion-sense (V1 and V2) and four complementary-sense (C1, C2, C3, and C4) open reading frames (ORFs) of Tomato leaf curl virus (TLCV) was studied in both stably and transiently **transformed** Nicotiana tabacum tissues with fusions with the beta-glucuronidase (GUS) reporter gene. GUS-expressing transgenic lines were obtained with each of the four complementary-sense gene-GUS fusion constructs and with truncated versions of the virion-sense gene-GUS fusion constructs (V1GUSdeltaC and V2GUSdeltaC) lacking complementary-sense sequences encoding the C1, C2, and C3 ORFs. However, little or no GUS expression was observed in **kanamycin**-resistant plants **transformed** with full-length, virion-sense gene constructs (V1GUS and V2GUS) constituting the complete viral genome. In contrast, V1GUS and V2GUS were found to direct high-level GUS expression in transient assays with tobacco protoplasts, suggesting that integration of viral constructs containing functional, complementary-sense genes may lead to repression or deletion of the introduced constructs in transgenic tissues. V2GUS

expression in the transient protoplast assay was found to be severely curtailed by specific mutation of the C2 ORF, supporting a role for the C2 protein in transactivation of TLCV virion-sense gene expression. TLCV ORF-GUS constructs displayed distinctive tissue expression patterns in transgenic tobacco plants that could be divided into constitutive (C1, C4, and V2GUSdeltaC), predominantly vascular (C2, C3), or reduced expression in cells associated with the vascular bundles (V1GUSdeltaC). The significance of these results is discussed in terms of current models of gene function and regulation in **geminiviruses**.

L4 ANSWER 19 OF 26 MEDLINE
ACCESSION NUMBER: 91195061 MEDLINE
DOCUMENT NUMBER: 91195061
TITLE: Replication of a **geminivirus** derived shuttle vector in maize endosperm cells.
AUTHOR: Ugaki M; Ueda T; Timmermans M C; Vieira J; Elliston K O; Messing J
CORPORATE SOURCE: Waksman Institute, Rutgers, State University of New Jersey, Piscataway 08855-0759.
SOURCE: NUCLEIC ACIDS RESEARCH, (1991 Jan 25) 19 (2) 371-7. Journal code: O8L. ISSN: 0305-1048.
PUB. COUNTRY: ENGLAND: United Kingdom
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals; Cancer Journals
ENTRY MONTH: 199107
AB A maize (Zea mays L.) endosperm cell culture has been shown to efficiently replicate DNA sequences derived from wheat dwarf virus (WDV), a monopartite monocot **geminivirus**. To analyze sequences necessary for viral replication and to verify their application for a plant gene expression vector, we have developed a 3.7 kilobase pairs Escherichia coli--plant cell shuttle vector, pWI-11. The p15A origin of replication, functional in E. coli, was introduced into the viral sequences. We have replaced the coding region of the coat protein gene by that of bacterial **neomycin** phosphotransferase II (NPT II) gene. The resulting NPT II gene fusion can serve as a selectable marker in both plant and E. coli systems. Into a unique cloning site in this pWI-11 vector, we introduced a gene fusion carrying the bacterial beta-glucuronidase (GUS) coding region under control of the cauliflower mosaic virus 35S (CaMV35S) gene promoter and terminator. By transferring these viral sequences into protoplasts derived from maize endosperm cell cultures, we have demonstrated that the plasmid pWI-11 can replicate in maize endosperm cells, that the GUS reporter gene introduced into pWI-11 can be expressed at high level in the **transformed** cells, and that the replicating viral DNA can be rescued from endosperm cells by **transforming** E. coli in the presence of **kanamycin**. The level of GUS gene expression increased progressively in **transformed** endosperm cells during a prolonged culture period, coinciding with replication of the viral sequences in these cells.

L4 ANSWER 20 OF 26 MEDLINE
ACCESSION NUMBER: 89240007 MEDLINE
DOCUMENT NUMBER: 89240007
TITLE: Stability and expression of bacterial genes in replicating **geminivirus** vectors in plants.
AUTHOR: Hayes R J; Coutts R H; Buck K W
CORPORATE SOURCE: Department of Pure and Applied Biology, Imperial College of Science, Technology and Medicine, London, UK.
SOURCE: NUCLEIC ACIDS RESEARCH, (1989 Apr 11) 17 (7) 2391-403.

Journal code: O8L. ISSN: 0305-1048.
PUB. COUNTRY: ENGLAND: United Kingdom
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals; Cancer Journals
ENTRY MONTH: 198908

AB Bacterial beta-glucuronidase (gus) and **neomycin** phosphotransferase (neo) genes were introduced into coat protein replacement vectors based on DNA A of tomato golden mosaic virus (TGMV). Recombinant gus and neo vectors up to 1.1 kbp larger than DNA A were shown to replicate stably in transgenic plants containing partial dimers (master copies) of the vectors integrated into their chromosomal DNA in the absence of DNA B. Beta-glucuronidase and **neomycin** phosphotransferase activities in independently **transformed** plants were proportional to the copy number of the double-stranded forms of the vector. Deletion analysis has shown that an essential part of the TGMV coat protein promoter, including a TATA box, lies within 76 nt upstream of the initiation codon of the gene. An increase in expression of a neo gene was obtained by replacing this 76 nt sequence by an 800 nt sequence containing a cauliflower mosaic virus 35S RNA promoter with no effect on the ability of the vector to replicate or on its stability in transgenic plants. Systemic infection of plants by **agroinoculation** with TGMV vectors larger than DNA A in the presence of DNA B resulted in deletions in the vector DNA in some, but not all, plants. Possible reasons for vector instability in systemically infected plants, and vector stability in transgenic plants containing master copies of the vector, are discussed.

L4 ANSWER 21 OF 26 EMBASE COPYRIGHT 2000 ELSEVIER SCI. B.V.
ACCESSION NUMBER: 91122294 EMBASE
DOCUMENT NUMBER: 1991122294
TITLE: Replication of a **geminivirus** derived shuttle vector in maize endosperm cells.
AUTHOR: Ugaki M.; Ueda T.; Timmermans M.C.P.; Vieira J.; Elliston K.O.; Messing J.
CORPORATE SOURCE: Waksman Institute, Rutgers-The State University, PO Box 759,Piscataway, NJ 08855-0759, United States
SOURCE: Nucleic Acids Research, (1991) 19/2 (371-377). ISSN: 0305-1048 CODEN: NARHAD
COUNTRY: United Kingdom
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 047 Virology
LANGUAGE: English
SUMMARY LANGUAGE: English

AB A maize (Zea mays L.) endosperm cell culture has been shown to efficiently replicate DNA sequences derived from wheat dwarf virus (WDV), a monopartite monocot **geminivirus**. To analyze sequences necessary for viral replication and to verify their application for a plant gene expression vector, we have developed a 3.7 kilobase pairs Escherichia coli-plant cell shuttle vector, pWI-11. The p15A origin of replication, functional in E. coli, was introduced into the viral sequences. We have replaced the coding region of the coat protein gene by that of bacterial **neomycin** phosphotransferase II (NPT II) gene. The resulting NPT II gene fusion can serve as a selectable marker in both plant and E. coli systems. Into a unique cloning site in this pWI-11 vector, we introduced a gene fusion carrying the bacterial .beta.-glucuronidase (GUS) coding region under control of the cauliflower mosaic virus 35S (CaMV35S) gene promoter and terminator. By transferring these viral sequences into protoplasts derived from maize endosperm cell cultures, we have

demonstrated that the plasmid pWI-11 can replicate in maize endosperm cells, that the GUS reporter gene introduced into pWI-11 can be expressed at high level in the **transformed** cells, and that the replicating viral DNA can be rescued from endosperm cells by **transforming** E. coli in the presence of **kanamycin**. The level of GUS gene expression increased progressively in **transformed** endosperm cells during a prolonged culture period, coinciding with replication of the viral sequences in these cells.

L4 ANSWER 22 OF 26 SCISEARCH COPYRIGHT 2000 ISI (R)
ACCESSION NUMBER: 2000:321534 SCISEARCH
THE GENUINE ARTICLE: 306RE
TITLE: Regulation of tomato leaf curl viral gene expression in host tissues
AUTHOR: Dry I (Reprint); Krake L; Mullineaux P; Rezaian A
CORPORATE SOURCE: CSIRO, PLANT IND, HORT UNIT, POB 350, GLEN OSMOND, SA 5064, AUSTRALIA (Reprint); JOHN INNES CTR PLANT SCI RES, NORWICH NR4 7UH, NORFOLK, ENGLAND
COUNTRY OF AUTHOR: AUSTRALIA; ENGLAND
SOURCE: MOLECULAR PLANT-MICROBE INTERACTIONS, (MAY 2000) Vol. 13, No. 5, pp. 529-537.
Publisher: AMER PHYTOPATHOLOGICAL SOC, 3340 PILOT KNOB ROAD, ST PAUL, MN 55121.
ISSN: 0894-0282.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE; AGRI
LANGUAGE: English
REFERENCE COUNT: 31
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB The regulation of expression of the two virion-sense (V1 and V2) and four complementary-sense (C1, C2, C3, and C4) open reading frames (ORFs) of Tomato leaf curl virus (TLCV) was studied in both stably and transiently **transformed** Nicotiana tabacum tissues with fusions with the beta-glucuronidase (GUS) reporter gene. GUS-expressing transgenic lines were obtained with each of the four complementary-sense gene-GUS fusion constructs and with truncated versions of the virion-sense gene-GUS fusion constructs (V1GUS Delta C and V2GUS Delta C) lacking complementary-sense sequences encoding the C1, C2, and C3 ORFs, However, little or no GUS expression was observed in **kanamycin**-resistant plants **transformed** with full-length, virion-sense gene constructs (V1GUS and V2GUS) constituting the complete viral genome. In contrast, V1GUS and V2GUS were found to direct high-level GUS expression in transient assays with tobacco protoplasts, suggesting that integration of viral constructs containing functional, complementary-sense genes may lead to repression or deletion of the introduced constructs in transgenic tissues. V2GUS expression in the transient protoplast assay was found to be severely curtailed by specific mutation of the C2 ORF, supporting a role for the C2 protein in transactivation of TLCV virion-sense gene expression. TLCV ORF-GUS constructs displayed distinctive tissue expression patterns in transgenic tobacco plants that could be divided into constitutive (C1, C4, and V2GUS Delta C), predominantly vascular (C2, C3), or reduced expression in cells associated with the vascular bundles (V1GUS Delta C), The significance of these results is discussed in terms of current models of gene function and regulation in **geminiviruses** .

L4 ANSWER 23 OF 26 SCISEARCH COPYRIGHT 2000 ISI (R)
ACCESSION NUMBER: 1999:32765 SCISEARCH
THE GENUINE ARTICLE: 151HX
TITLE: PSa causes oncogenic suppression of **Agrobacterium** by inhibiting VirE2 protein export
AUTHOR: Lee L Y; Gelvin S B (Reprint); Kado C I
CORPORATE SOURCE: PURDUE UNIV, DEPT BIOL SCI, W LAFAYETTE, IN 47907

(Reprint); PURDUE UNIV, DEPT BIOL SCI, W LAFAYETTE, IN 47907; UNIV CALIF DAVIS, DAVIS CROWN GALL GRP, DAVIS, CA 95616
COUNTRY OF AUTHOR: USA
SOURCE: JOURNAL OF BACTERIOLOGY, (JAN 1999) Vol. 181, No. 1, pp. 186-196.
Publisher: AMER SOC MICROBIOLOGY, 1325 MASSACHUSETTS AVENUE, NW, WASHINGTON, DC 20005-4171.
ISSN: 0021-9193.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: English
REFERENCE COUNT: 44

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB When coresident with the Ti (tumor-inducing) plasmid, the 21-kDa product of the osa gene of the plasmid pSa can suppress crown gap tnmorigenesis incited by **Agrobacterium** tumefaciens. Neither T-DNA processing nor vir (virulence) gene induction is affected by the presence of asa in the bacterium. We used Arabidopsis thaliana root segments and tobacco leaf discs to demonstrate that Osa inhibits A. tumefaciens from **transforming** these plants to the stable phenotypes of tumorigenesis, **kanamycin** resistance, and stable beta-glucuronidase (GUS) expression. When A. tumefaciens contained osa, the lack of expression of transient GUS activity in infected plant tissues, as well as the lack of systemic viral symptoms following agroinfection of Nicotiana Benthamiana by tomato mottle virus, suggested that oncogenic suppression by Osa occurs before T-DNA enters the plant nucleus. The extracellular complementation of an A. tumefaciens virE2 mutant (the T-DNA donor strain) by an A. tumefaciens strain lacking T-DNA but containing a wild-type virE2 gene (the VirE2 donor strain) was blocked when osa was present in the VirE2 donor strain, but not If hen osa was present in the T-DNA donor strain. These data indicate that osa inhibits VirE2 protein, but not T-DNA export from A. tumefaciens, These data further suggest that VirE2, protein and T-DNA are separately exported from the bacterium. The successful infection of Datura stramonium plants and leaf discs of transgenic tobacco plants expressing VirE2 protein by an A. tumefaciens virE2 mutant carrying osa confirmed that oncogenic suppression by osa does not occur by blocking T-DNA transfer. Overexpression of virB9, virB10, and virB11 in A. tumefaciens did not overcome oncogenic suppression by osa. The finding that the expression of the osa gene by itself rather than the formation of a conjugal intermediate with pSa, blocks **transformation** suggests that the mechanism of oncogenic suppression by osa may differ from that of the IncQ plasmid RSF1010.

L4 ANSWER 24 OF 26 SCISEARCH COPYRIGHT 2000 ISI (R)
ACCESSION NUMBER: 94:217419 SCISEARCH
THE GENUINE ARTICLE: NE612
TITLE: SIMULTANEOUS REGULATION OF TOMATO GOLDEN MOSAIC-VIRUS COAT PROTEIN AND AL1 GENE-EXPRESSION - EXPRESSION OF THE AL4 GENE MAY CONTRIBUTE TO SUPPRESSION OF THE AL1 GENE
AUTHOR: GRONING B R; HAYES R J; BUCK K W (Reprint)
CORPORATE SOURCE: UNIV LONDON IMPERIAL COLL SCI TECHNOL & MED, DEPT BIOL, PRINCE CONSORT RD, LONDON SW7 2BB, ENGLAND (Reprint); UNIV LONDON IMPERIAL COLL SCI TECHNOL & MED, DEPT BIOL, LONDON SW7 2BB, ENGLAND
COUNTRY OF AUTHOR: ENGLAND
SOURCE: JOURNAL OF GENERAL VIROLOGY, (APR 1994) Vol. 75, Part 4, pp. 721-726.
ISSN: 0022-1317.
DOCUMENT TYPE: Article; Journal

FILE SEGMENT: LIFE
LANGUAGE: ENGLISH
REFERENCE COUNT: 38

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB The tomato golden mosaic virus (TGMV) coat protein and AL1 genes are located in opposite directions on either side of an intergenic region. To enable the effects of the AL1, AL2 and AL3 gene products on expression of the coat protein and AL1 genes to be studied simultaneously, a plasmid was constructed, containing the intergenic region linked on one side to a 5'-terminal portion of the ALI gene fused to a P-glucuronidase (GUS) reporter gene (to replace most of the AL1 gene) and on the other side to a **neomycin** phosphotransferase (NEO) reporter gene (to replace the coat protein gene). This GUS-NEO plasmid was mixed with plant expression plasmids containing the AL1, AL2 or AL3 coding regions, the DNA was **transformed** into Nicotiana benthamiana protoplasts and GUS activities and NEO protein levels were measured. Control **transformations** were carried out with the GUS-NEO plasmid mixed with the AL1, AL2 or AL3 plasmids in which mutations were introduced to prevent translation of the open reading frames (ORFs). The results showed that transactivation of the coat protein gene by the AL2 gene product and suppression of the AL1 gene by the expression of AL1 DNA (both reported previously) can occur simultaneously. It was also shown that expression of AL4, a small ORF contained within AL1 DNA but in a different reading frame, as well as expression of ORF AL1, can cause significant suppression of AL1 gene expression. Neither the AL1 nor the AL3 gene products affected the expression of the coat protein gene.

L4 ANSWER 25 OF 26 SCISEARCH COPYRIGHT 2000 ISI (R)
ACCESSION NUMBER: 92:427025 SCISEARCH
THE GENUINE ARTICLE: JD215
TITLE: TOBACCO LINES WITH HIGH COPY NUMBER OF REPLICATING RECOMBINANT **GEMINIVIRUS** VECTORS AFTER BIOLISTIC DNA DELIVERY
AUTHOR: KANEVSKI I F; THAKUR S; COSOWSKY L; SUNTER G; BROUGH C; BISARO D; MALIGA P (Reprint)
CORPORATE SOURCE: RUTGERS STATE UNIV, WAKSMAN INST, PISCATAWAY, NJ, 08855; OHIO STATE UNIV, CTR BIOTECHNOL, COLUMBUS, OH, 43210; OHIO STATE UNIV, DEPT MOLEC GENET, COLUMBUS, OH, 43210
COUNTRY OF AUTHOR: USA
SOURCE: PLANT JOURNAL, (JUL 1992) Vol. 2, No. 4, pp. 457-463. ISSN: 0960-7412.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: ENGLISH
REFERENCE COUNT: 29

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB The feasibility of obtaining clonal lines with replicating, multicopy **geminivirus** vectors by direct DNA **transformation** of cultured tobacco cells was studied. The replicating vectors pTGA32 and pST31 are based on the tomato golden mosaic virus (TGMV) A genome and encode the **neomycin** phosphotransferase type II (NPT-II) enzyme that confers **kanamycin** resistance to plant cells. Following introduction into plant cells, unit-length viral genomes were released from the tandem repeats and replicated. In protoplasts, replication of unit-length pTGA32 and pST31 was about as efficient as replication of unit-length DNA A from plasmid pTGA26, which contains 1.5 copies of wild-type DNA A. Tobacco suspension culture cells were bombarded with the recombinant DNA A constructs and selected for **kanamycin** resistance. The number of **kanamycin**-resistant clones per bombardment was about the same when the TGMV DNA A vectors or a

non-replicating plasmid (pLC14) which also encodes NPT-II was used. Replicating, unit-length DNA A in up to approximately 1000 copies per cell was found in about 10% of the **kanamycin**-resistant clones selected following bombardment of cells with TGMV vectors. The results suggest that **geminiviruses** may serve as useful multicopy vectors in cultured cells.

L4 ANSWER 26 OF 26 SCISEARCH COPYRIGHT 2000 ISI (R)
ACCESSION NUMBER: 91:82098 SCISEARCH
THE GENUINE ARTICLE: EV868
TITLE: REPLICATION OF A **GEMINIVIRUS** DERIVED SHUTTLE VECTOR IN MAIZE ENDOSPERM CELLS
AUTHOR: UGAKI M; UEDA T; TIMMERMANS M C P; VIEIRA J; ELLISTON K O;
MESSING J (Reprint)
CORPORATE SOURCE: RUTGERS STATE UNIV, WAKSMAN INST, POB 759, PISCATAWAY, NJ,
08855
COUNTRY OF AUTHOR: USA
SOURCE: NUCLEIC ACIDS RESEARCH, (1991) Vol. 19, No. 2, pp. 371-377
.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: ENGLISH
REFERENCE COUNT: 41
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB A maize (Zea mays L.) endosperm cell culture has been shown to efficiently replicate DNA sequences derived from wheat dwarf virus (WDV), a monopartite monocot **geminivirus**. To analyze sequences necessary for viral replication and to verify their application for a plant gene expression vector, we have developed a 3.7 kilobase pairs Escherichia coli - plant cell shuttle vector, pWI-11. The p15A origin of replication, functional in E. coli, was introduced into the viral sequences. We have replaced the coding region of the coat protein gene by that of bacterial **neomycin** phosphotransferase II (NPT II) gene. The resulting NPT II gene fusion can serve as a selectable marker in both plant and E. coli systems. Into a unique cloning site in this pWI-11 vector, we introduced a gene fusion carrying the bacterial beta-glucuronidase (GUS) coding region under control of the cauliflower mosaic virus 35S (CaMV35S) gene promoter and terminator. By transferring these viral sequences into protoplasts derived from maize endosperm cell cultures, we have demonstrated that the plasmid pWI-11 can replicate in maize endosperm cells, that the GUS reporter gene introduced into pWI-11 can be expressed at high level in the **transformed** cells, and that the replicating viral DNA can be rescued from endosperm cells by **transforming** E. coli in the presence of **kanamycin**. The level of GUS gene expression increased progressively in **transformed** endosperm cells during a prolonged culture period, coinciding with replication of the viral sequences in these cells.

=> d his

(FILE 'HOME' ENTERED AT 12:52:33 ON 11 DEC 2000)

FILE 'DGENE, CAPLUS, BIOSIS, MEDLINE, EMBASE, SCISEARCH' ENTERED AT 12:52:57 ON 11 DEC 2000
L1 3600 S GEMINIVIRUS OR GEMINI VIRUS
L2 1272166 S L1 AND AGROBACTER? OR AGROINOCULAT? OR TRANSFOR?
L3 565 S L1 AND (AGROBACTER? OR AGROINOCULAT? OR TRANSFOR?)
L4 26 S L3 AND (NEOMY? OR KANA?)

=> l1 and silenc?

L1 IS NOT A RECOGNIZED COMMAND
The previous command name entered was not recognized by the system.
For a list of commands available to you in the current file, enter
"HELP COMMANDS" at an arrow prompt (=>).

=> s l1 and silenc?

L5 21 L1 AND SILENC?

=> d ibib abs l5 1-21

L5 ANSWER 1 OF 21 DGENE COPYRIGHT 2000 DERWENT INFORMATION LTD
ACCESSION NUMBER: 2000N-Z59422 DNA DGENE
TITLE: Novel DNA control sequence useful for controlling and combating plant pathogen infections and spread -
INVENTOR: Gheysen G; Mironov V; Inze D G; Terras F R G; Van Camp W; Sanz Molinero A I
PATENT ASSIGNEE: (CROP-N)CROPDESIGN NV
PATENT INFO: WO 9966055 A2 19991223 82p
APPLICATION INFO: WO 1999-EP4139 19990615
PRIORITY INFO: EP 1998-202012 19980615
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2000-106106 [09]
AB This sequence represents a PCR primer which is used to amplify **silencer** elements from **geminiviruses**. The PCR product is used in a modified construct containing geminiviral promoters and an antisense rice PCNA. The invention relates to a chimeric gene or recombinant DNA molecule, comprising a plant pathogen inducible control sequence operably linked to a cell cycle gene. Examples of the cell cycle gene include cyclin genes, cyclin dependent kinase genes, a retinoblastoma gene or a gene encoding a protein involved in DNA replication. In combination the pathogen inducible control sequence, and cell cycle gene, are capable of modifying the cell cycle of a plant cell in response to infection. A vector containing the chimeric gene can be used to create a host cell expressing the gene. The chimeric gene or recombinant DNA molecule can be used for reducing susceptibility to plant pathogen infections or spread, and to combat or control plant pathogens and infections. Inhibiting the cell cycle upon pathogenic infection is a nondestructive method (expression of cell cycle genes will not affect non-dividing cells) and will not affect the physiology of other cells and tissues in the plant. Also the use of transgenic cell cycle technologies will reduce the use of highly toxic pesticides and should give broad range and long term resistance against many species of pathogens

L5 ANSWER 2 OF 21 DGENE COPYRIGHT 2000 DERWENT INFORMATION LTD
ACCESSION NUMBER: 2000N-Z59421 DNA DGENE
TITLE: Novel DNA control sequence useful for controlling and combating plant pathogen infections and spread -
INVENTOR: Gheysen G; Mironov V; Inze D G; Terras F R G; Van Camp W; Sanz Molinero A I
PATENT ASSIGNEE: (CROP-N)CROPDESIGN NV
PATENT INFO: WO 9966055 A2 19991223 82p
APPLICATION INFO: WO 1999-EP4139 19990615
PRIORITY INFO: EP 1998-202012 19980615
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2000-106106 [09]
AB This sequence represents a PCR primer which is used to amplify **silencer** elements from **geminiviruses**. The PCR product

is used in a modified construct containing geminiviral promoters and an antisense rice PCNA. The invention relates to a chimeric gene or recombinant DNA molecule, comprising a plant pathogen inducible control sequence operably linked to a cell cycle gene. Examples of the cell cycle gene include cyclin genes, cyclin dependent kinase genes, a retinoblastoma gene or a gene encoding a protein involved in DNA replication. In combination the pathogen inducible control sequence, and cell cycle gene, are capable of modifying the cell cycle of a plant cell in response to infection. A vector containing the chimeric gene can be used to create a host cell expressing the gene. The chimeric gene or recombinant DNA molecule can be used for reducing susceptibility to plant pathogen infections or spread, and to combat or control plant pathogens and infections. Inhibiting the cell cycle upon pathogenic infection is a nondestructive method (expression of cell cycle genes will not affect non-dividing cells) and will not affect the physiology of other cells and tissues in the plant. Also the use of transgenic cell cycle technologies will reduce the use of highly toxic pesticides and should give broad range and long term resistance against many species of pathogens

L5 ANSWER 3 OF 21 DGENE COPYRIGHT 2000 DERWENT INFORMATION LTD
ACCESSION NUMBER: 2000N-Z57893 DNA DGENE
TITLE: Chimeric promoter for mediating **geminivirus**-induced gene expression -
INVENTOR: Rivera-Bustamante R F; Ruiz-Medrano R; Arguello-Astorga G; Monsalve-Fonnegra Z I
PATENT ASSIGNEE: (INVE-N)CENT INVESTIGACION ESTUDIOS AVANZADOS
PATENT INFO: WO 9960140 A2 19991125 63p
APPLICATION INFO: WO 1999-IB1282 19990519
PRIORITY INFO: EP 1998-201636 19980519
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2000-116317 [10]
AB The present sequence is that of primer Sil-2, used in the PCR amplification of the **silencer**-like element of pepper huasteco virus (PHV). The amplified DNA fragment was used in constructs in which the PHV **silencer** was combined with a **geminivirus** conserved late element (CLE). CLEs (see Z57884-87) are cis-acting elements present in the intergenic region of some **geminiviruses**. They promote transcription by responding to nuclear factors present and/or activated in a plant cell after geminiviral infection. The invention relates to a chimeric promoter (I) that is capable of mediating the expression of a heterologous DNA sequence in plants upon **geminivirus** infection, and which comprises at least 1 CLE and a promoter. (I), or a gene or a vector comprising (I), is used in claimed methods for producing transgenic plants with a reduced susceptibility to geminiviral infection and spread

L5 ANSWER 4 OF 21 DGENE COPYRIGHT 2000 DERWENT INFORMATION LTD
ACCESSION NUMBER: 2000N-Z57892 DNA DGENE
TITLE: Chimeric promoter for mediating **geminivirus**-induced gene expression -
INVENTOR: Rivera-Bustamante R F; Ruiz-Medrano R; Arguello-Astorga G; Monsalve-Fonnegra Z I
PATENT ASSIGNEE: (INVE-N)CENT INVESTIGACION ESTUDIOS AVANZADOS
PATENT INFO: WO 9960140 A2 19991125 63p
APPLICATION INFO: WO 1999-IB1282 19990519
PRIORITY INFO: EP 1998-201636 19980519
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2000-116317 [10]
AB The present sequence is that of primer Sil-1, used in the PCR amplification of the **silencer**-like element of pepper huasteco

virus (PHV). The amplified DNA fragment was used in constructs in which the PHV **silencer** was combined with a **geminivirus** conserved late element (CLE). CLEs (see Z57884-87) are cis-acting elements present in the intergenic region of some **geminiviruses**. They promote transcription by responding to nuclear factors present and/or activated in a plant cell after geminiviral infection. The invention relates to a chimeric promoter (I) that is capable of mediating the expression of a heterologous DNA sequence in plants upon **geminivirus** infection, and which comprises at least 1 CLE and a promoter. (I), a or gene or vector comprising (I), is used in claimed methods for producing transgenic plants with a reduced susceptibility to geminiviral infection and spread

L5 ANSWER 5 OF 21 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 2000:659002 CAPLUS
TITLE: Plant DNA viruses and gene **silencing**
AUTHOR(S): Covey, Simon N.; Al-Kaff, Nadia S.
CORPORATE SOURCE: John Innes Centre, Norwich Research Park, Norwich, NR4 7UH, UK
SOURCE: Plant Mol. Biol. (2000), 43(2/3), 307-322
CODEN: PMBIDB; ISSN: 0167-4412
PUBLISHER: Kluwer Academic Publishers
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Gene **silencing** is a multifaceted phenomenon leading to propagative down-regulation of gene expression. Gene **silencing**, first obsd. in plants contg. transgenes, can operate both at the transcriptional and post-transcriptional levels. **Silencing** effects can be triggered by nuclear transgenes and by cytoplasmic RNA viruses, and it can be propagated between these elements and endogenous plant genes that share sequence homol. Although some aspects of gene **silencing** are becoming better understood, little is yet known about the relationship between nuclear and cytoplasmic events. Plant DNA viruses - both the ssDNA **geminiviruses** and the reverse-transcribing pararetroviruses - have properties with the potential to initiate gene **silencing** in the nucleus and in the cytoplasm. Characteristics include prodn. of multiple copies of viral DNA genomes in the nucleus, illegitimate integration of viral DNA into host chromosomes mimicking transgene transformation, and generation of abundant viral RNAs in the cytoplasm. Evidence is emerging that **geminiviruses** and plant pararetroviruses can interact with the gene **silencing** system either from introduced DNA constructs or during viral pathogenesis.

Some observations suggest there are complex relationships between DNA viral activity, transcriptional and post-transcriptional gene **silencing** mechanisms. DNA viruses also have properties consistent with an ability to counteract the plant **silencing** response. In this article, features of plant DNA viruses are discussed in relation to gene **silencing** phenomena, and the prospects for understanding the interaction between nuclear and cytoplasmic **silencing** processes.

REFERENCE COUNT: 71
REFERENCE(S):
(1) Ach, R; Mol Cell Biol 1997, V17, P5077 CAPLUS
(2) Al-Kaff, N; Mol Plant-Microbe Interact 1996, V9, P357 CAPLUS
(4) Al-Kaff, N; Science 1998, V279, P2113 CAPLUS
(5) Ashby, M; Plant Mol Biol 1997, V35, P313 CAPLUS
(6) Atkinson, R; Plant J 1998, V15, P593 CAPLUS
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 6 OF 21 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 2000:210387 CAPLUS
DOCUMENT NUMBER: 132:247158

TITLE: Binary viral expression system for plants using site-specific recombination to regulate the formation of a replication-competent episome
INVENTOR(S): Yadav, Narendra S.
PATENT ASSIGNEE(S): E.I. Du Pont De Nemours and Co., USA
SOURCE: PCT Int. Appl., 82 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000017365	A2	20000330	WO 1999-US21989	19990922
WO 2000017365	A3	20000824		

W: AU, BR, CA, HU, IL, JP, KR, MX, NZ, PL, US
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE

PRIORITY APPLN. INFO.: US 1998-101558 19980923
US 1999-130086 19990420

AB This invention provides a regulated binary plant viral expression system comprised of two chromosomally-integrated components. One component is an incomplete replicon (a pro-replicon), that contains cis-acting viral sequences required for replication and a target gene. The pro-replicon lacks a gene essential for its function, and thus cannot undergo autonomous episomal replication. The other component is a chimeric trans-acting replication gene under control of a regulated promoter. Expression of the trans-acting replication protein in plant cells contg. the pro-replicon will trigger the release of free replicon from the integrated pro-replicon, resulting in its episomal replication in trans and the expression of the target gene, if present, through gene amplification. The expression system is useful for both prodn. of foreign proteins as well as **silencing** endogenous genes and transgenes in plant tissue. Tissue-specific expression is controlled by the choice of promoter controlling the transcription of the trans-acting replication gene.

L5 ANSWER 7 OF 21 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1999:753362 CAPLUS
DOCUMENT NUMBER: 132:9623
TITLE: **Geminivirus** inducible promoter sequences and the uses thereof to control **geminivirus** infection in plants
INVENTOR(S): Rivera-Bustamante, Rafael F.; Ruiz-Medrano, Roberto; Arguello-Astorga, Gerardo; Monsalve-Fonnegra, Zulma I.
PATENT ASSIGNEE(S): Centro de Investigacion y de Estudios Avanzados del I.P.N. (CINVESTAV), Mex.
SOURCE: PCT Int. Appl., 64 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9960140	A2	19991125	WO 1999-IB1282	19990519
WO 9960140	A3	20000615		

W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ,

TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

EP 960940	A1	19991201	EP 1998-201636	19980519
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
AU 9945286	A1	19991206	AU 1999-45286	19990519
PRIORITY APPLN. INFO.:			EP 1998-201636	19980519
			WO 1999-IB1282	19990519

AB Novel chimeric promoters which allow controlled transcription and/or expression of a nucleic acid sequence upon **geminivirus** infection, and the use of such recombinant promoters are provided. Furthermore, recombinant genes comprising such promoters, and transgenic plant cells, and plants comprising the chimeric promoters or recombinant genes are described. It appears that upon infection of the plant with wild-type virus, or a part thereof such as the AC2 protein, expression of adjacent genes occurs under the control and influence of a geminiviral promoter. Small nucleotide sequences, referred to as CLEs (conserved late elements), present in the geminiviral promoter, are sufficient to induce said expression. According to the current invention it is thus feasible to construct transgenic plants, comprising at least one of said CLEs or functional fragments thereof, which are resistant to geminiviral infection. To obtain this effect, adjacent to or operably linked to any of the said CLEs any gene or gene combination can be constructed, which gene or gene product is able to interfere with the outbreak or growth characteristics of the **geminivirus** in order to arrest further spread of the **geminivirus** in the infected plant or part thereof.

L5 ANSWER 8 OF 21 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1999:641000 CAPLUS
DOCUMENT NUMBER: 131:253367
TITLE: Suppression of gene expression in plants using **geminivirus** vectors
INVENTOR(S): Robertson, Dominique
PATENT ASSIGNEE(S): North Carolina State University, USA
SOURCE: PCT Int. Appl., 42 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9950429	A1	19991007	WO 1999-US6082	19990319
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
AU 9931048	A1	19991018	AU 1999-31048	19990319
PRIORITY APPLN. INFO.:			US 1998-80383	19980401
			WO 1999-US6082	19990319

AB The introduction of DNA episomes into plant cells to reduce or prevent the expression of endogenous nuclear or chromosomal genes is described. **Geminivirus** vectors (e.g., tomato golden mosaic virus, TGMV) to provide systemic **silencing** of an endogenous plant gene in a treated plant are described. Two markers were used to assess **silencing**: (1) the sulfur allele (su) of magnesium chelatase, and

enzyme require for chlorophyll formation; and (2) the firefly luciferase gene (luc). Various portions of both marker genes were inserted into TGMV in place of the coat protein open reading frame and the constructs introduced in leaves of wild-type Nicotiana benthamiana using particle bombardment. Fragments that caused **silencing** included a 786-bp 5'-fragment of the 1392-bp su cDNA in sense and antisense orientation, and a 403-bp 3'-fragment of su cDNA. TGMV::su-induced **silencing** was propagated through tissue culture, along with the viral episome, but was not retained through meiosis. Systemic down-regulation of a constitutively expressed luciferase transgene in plants was achieved following infection with TGMV vectors carrying a 62-bp portion of luc in sense or antisense orientation. Thus, a nuclear-localized DNA virus (such as the TGMV **geminivirus**) carrying sequences complementary to (or having substantial sequence similarity to) chromosomal genes can **silence** the chromosomal gene.

REFERENCE COUNT: 8

REFERENCE(S):

(1) Atkinson, R; THE PLANT JOURNAL 1998, V15(5), P593 CAPLUS
(2) Baulcombe, D; CURRENT OPINION IN BIOTECHNOLOGY 1996, V7(2), P173 CAPLUS
(4) Hayes, R; NATURE 1988, V334, P179 CAPLUS
(5) Kjemtrup, S; THE PLANT JOURNAL 1998, V14(1), P91 CAPLUS
(6) Matthew, B; EP 0221044 A 1987 CAPLUS
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 9 OF 21 CAPLUS COPYRIGHT 2000 ACS

ACCESSION NUMBER: 1999:468606 CAPLUS
DOCUMENT NUMBER: 131:98475
TITLE: Method of determining the function of nucleotide sequences and the proteins they encode by transfecting the same into a host
INVENTOR(S): Della-Cioppa, Guy; Erwin, Robert L.; Fitzmaurice, Wayne P.; Hanley, Kathleen M.; Kumagai, Monto H.; Lindbo, John A.; McGee, David R.; Padgett, Hal S.; Pogue, Gregory P.
PATENT ASSIGNEE(S): Biosource Technologies, Inc., USA
SOURCE: PCT Int. Appl., 156 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9936516	A2	19990722	WO 1999-US1164	19990115
WO 9936516	A3	20000316		
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
AU 9923286	A1	19990802	AU 1999-23286	19990115
EP 1045899	A2	20001025	EP 1999-903208	19990115
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				

PRIORITY APPLN. INFO.: US 1998-8186 19980116

AB The present invention provides methods for rapidly detg. the function of nucleic acid sequences by transfecting the same into a host organism to effect expression. Phenotypic and biochem. changes produced thereby are then analyzed to ascertain the function of the nucleic acids which have been transfected into the host organism. The invention also provides methods for **silencing** endogenous genes by transfecting hosts with nucleic acid sequences to effect expression of the same. The present invention also provides methods for selecting desired functions of RNAs and proteins by the use of virus vectors to express libraries of nucleic acid sequence variants. Moreover, the present invention provides methods for inhibiting an endogenous protease of a plant host.

L5 ANSWER 10 OF 21 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1999:299523 CAPLUS
DOCUMENT NUMBER: 130:321579
TITLE: Binary viral expression system for use in plants
INVENTOR(S): Yadav, Narendra S.
PATENT ASSIGNEE(S): E.I. Du Pont De Nemours and Company, USA
SOURCE: PCT Int. Appl., 46 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9922003	A1	19990506	WO 1998-US22688	19981023
W: AU, BR, CA, HU, IL, JP, KR, MX, NZ, PL, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
AU 9911225	A1	19990517	AU 1999-11225	19981023
US 6077992	A	20000620	US 1998-178089	19981023
EP 1025234	A1	20000809	EP 1998-953997	19981023
R: DE, ES, FR, GB, IT, SE				
PRIORITY APPLN. INFO.:			US 1997-63504	19971024
			US 1998-101558	19980923
			WO 1998-US22688	19981023

AB This invention provides a regulated binary plant viral expression system comprised of two chromosomally-integrated components. One component is a pro-replicon, which contains cis-acting viral sequences (required for replication) and a target gene. The pro-replicon lacks the replication gene essential for replicon replication, and thus cannot undergo autonomous episomal replication. The other component is a chimeric trans-acting replication gene comprising a regulated promoter operably-linked to the coding region for a viral replication protein. Regulated expression of the trans-acting replication protein in plant cells also contg. the pro-replicon will trigger the release of free replicon from the integrated pro-replicon, resulting in its episomal replication in trans and the expression of the target gene, if present, through gene amplification. The expression system is useful for both prodn. of foreign proteins as well as **silencing** endogenous genes and transgenes in plant tissue. Tissue-specific expression is controlled by the choice of promoter controlling the transcription of the trans-acting replication gene.

REFERENCE COUNT: 4
REFERENCE(S):
(1) Hanley-Bowdoin, L; PNAS USA 1990, V87(4), P1446 CAPLUS
(2) Hayes, R; Nucleic Acids Research 1989, V17(24), P10213 CAPLUS
(3) Hong, Y; Virology 1996, V220(1), P119 CAPLUS
(4) Hong, Y; Virology 1997, V228(2), P383 CAPLUS

L5 ANSWER 11 OF 21 CAPLUS COPYRIGHT 2000 ACS

ACCESSION NUMBER: 1998:649477 CAPLUS
DOCUMENT NUMBER: 130:48016
TITLE: Post-transcriptional **silencing** of chalcone synthase in petunia using a **geminivirus** -based episomal vector
AUTHOR(S): Atkinson, Ross G.; Bieleski, Lara R. F.; Gleave, Andrew P.; Janssen, Bart-Jan; Morris, Bret A. M.
CORPORATE SOURCE: Gene Transfer and Expression Group, Horticulture and Food Research Institute of New Zealand, Auckland, N. Z.
SOURCE: Plant J. (1998), 15(5), 593-604
CODEN: PLJUED; ISSN: 0960-7412
PUBLISHER: Blackwell Science Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English

AB A vector that produces DNA replicons (multicopy plant episomes) was constructed using elements of the **geminivirus** tobacco yellow dwarf virus (TYDV). All plant cells contain an integrated chromosomal T-DNA copy of the TYDV elements that provides a template for the prodn. of episomes in the cell nucleus. Transgenic Petunia hybrida plants contg. a CaMV 35S promoter-driven chalcone synthase A (ChsA) gene cloned into the episomal vector produced flowers with a white-spotted phenotype at high frequency. The spots were found at random locations in the petals and occurred in corresponding positions in both the upper and lower epidermis, indicating that the spots were non-clonal. The spotted phenotype was somatically stable and was inherited through meiosis. In white-spotted flower tissue, steady-state ChsA mRNA levels were down-regulated but rates of RNA transcription were unaffected, suggesting that the phenotype resulted from post-transcriptional gene **silencing** of the endogenous and episomal ChsA genes. Increases in both the frequency and extent of gene **silencing** in flowers correlated with increases in episome copy no. in mature flowers, flower buds and young and fully expanded leaves. Relatively small increases in episome copy no. (less than threefold) appeared sufficient to trigger the gene-**silenced** phenotype.

REFERENCE COUNT: 45
REFERENCE(S):
(1) Angell, S; EMBO J 1997, V16, P3675 CAPLUS
(3) Baulcombe, D; Curr Opin Biotechnol 1996, V7, P173 CAPLUS
(4) Boulton, M; J Gen Virol 1989, V70, P2309 CAPLUS
(5) Brough, C; Plant Mol Biol 1992, V18, P703 CAPLUS
(6) Cluster, P; Plant Mol Biol 1996, V32, P1197 CAPLUS

ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 12 OF 21 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1998:309121 CAPLUS
DOCUMENT NUMBER: 129:91319
TITLE: Gene **silencing** from plant DNA carried by a **Geminivirus**
AUTHOR(S): Kjemtrup, Susanne; Sampson, Kim S.; Peele, Charles G.; Nguyen, Long V.; Conkling, Mark A.; Thompson, William F.; Robertson, Dominique
CORPORATE SOURCE: Departments of Botany and Genetics, North Carolina State University, Raleigh, NC, 27695, USA
SOURCE: Plant J. (1998), 14(1), 91-100
CODEN: PLJUED; ISSN: 0960-7412
PUBLISHER: Blackwell Science Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The **geminivirus** tomato golden mosaic virus (TGMV) replicates in nuclei and expresses genes from high copy no. DNA episomes. The authors

used TGMV as a vector to det. whether episomal DNA can cause **silencing** of homologous, chromosomal genes. Two markers were used to assess **silencing**: (1) the sulfur allele (su) of magnesium chelatase, an enzyme required for chlorophyll formation; and (2) the firefly luciferase gene (luc). Various portions of both marker genes were inserted into TGMV in place of the coat protein open-reading frame and the constructs were introduced into intact plants using particle bombardment. When TGMV vectors carrying fragments of su (TGMV plus su) were introduced into leaves of wild-type Nicotiana benthamiana, circular, yellow spots with an area of several hundred cells formed after 3-5 days. Systemic movement of TGMV plus su subsequently produced variegated leaf and stem tissue. Fragments that caused **silencing** included a 786 bp 5' fragment of the 1392 bp su cDNA in sense and anti-sense orientation, and a 403 bp 3' fragment. TGMV plus su-induced **silencing** was propagated through tissue culture, along with the viral episome, but was not retained through meiosis. Systemic downregulation of a constitutively expressed luciferase transgene in plants was achieved following infection with TGMV vectors carrying a 623 bp portion of luc in sense or anti-sense orientation. These results establish that homologous DNA sequences localized in nuclear episomes can modulate the expression of active chromosomal genes.

L5 ANSWER 13 OF 21 BIOSIS COPYRIGHT 2000 BIOSIS
ACCESSION NUMBER: 2000:452747 BIOSIS
DOCUMENT NUMBER: PREV200000452747
TITLE: Plant DNA viruses and gene **silencing**.
AUTHOR(S): Covey, Simon N. (1); Al-Kaff, Nadia S.
CORPORATE SOURCE: (1) John Innes Centre, Colney, Norwich Research Park, Norwich, NR4 7UH UK
SOURCE: Plant Molecular Biology, (June, 2000) Vol. 43, No. 2-3, pp. 307-322. print.
ISSN: 0167-4412.
DOCUMENT TYPE: General Review
LANGUAGE: English
SUMMARY LANGUAGE: English
AB Gene **silencing** is a multifaceted phenomenon leading to propagative down-regulation of gene expression. Gene **silencing**, first observed in plants containing transgenes, can operate both at the transcriptional and post-transcriptional levels. **Silencing** effects can be triggered by nuclear transgenes and by cytoplasmic RNA viruses, and it can be propagated between these elements and endogenous plant genes that share sequence homology. Although some aspects of gene **silencing** are becoming better understood, little is yet known about the relationship between nuclear and cytoplasmic events. Plant DNA viruses - both the ssDNA **geminiviruses** and the reverse-transcribing pararetroviruses - have properties with the potential to initiate gene **silencing** in the nucleus and in the cytoplasm. Characteristics include production of multiple copies of viral DNA genomes in the nucleus, illegitimate integration of viral DNA into host chromosomes mimicking transgene transformation, and generation of abundant viral RNAs in the cytoplasm. Evidence is emerging that **geminiviruses** and plant pararetroviruses can interact with the gene **silencing** system either from introduced DNA constructs or during viral pathogenesis. Some observations suggest there are complex relationships between DNA viral activity, transcriptional and post-transcriptional gene **silencing** mechanisms. DNA viruses also have properties consistent with an ability to counteract the plant **silencing** response. In this article, features of plant DNA viruses

are discussed in relation to gene **silencing** phenomena, and the prospects for understanding the interaction between nuclear and cytoplasmic **silencing** processes.

L5 ANSWER 14 OF 21 BIOSIS COPYRIGHT 2000 BIOSIS
ACCESSION NUMBER: 1998:448670 BIOSIS
DOCUMENT NUMBER: PREV199800448670
TITLE: Post-transcriptional **silencing** of chalcone synthase in petunia using a **geminivirus**-based episomal vector.
AUTHOR(S): Atkinson, Ross G. (1); Bieleski, Lara R. F.; Gleave, Andrew P.; Janssen, Bart-Jan; Morris, Bret A. M.
CORPORATE SOURCE: (1) Gene Transfer Expression Group, Horticulture Food Res. Inst. New Zealand, Private Bag 92169, Auckland New Zealand
SOURCE: Plant Journal, (Sept., 1998) Vol. 15, No. 5, pp. 593-604. ISSN: 0960-7412.
DOCUMENT TYPE: Article
LANGUAGE: English
AB A vector that produces DNA replicons (multicopy plant episomes) was constructed using elements of the **geminivirus** tobacco yellow dwarf virus (TYDV). All plant cells contain an integrated chromosomal T-DNA copy of the TYDV elements that provides a template for the production of episomes in the cell nucleus. Transgenic Petunia hybrida plants containing a CaMV 35S promoter-driven chalcone synthase A (ChsA) gene cloned into the episomal vector produced flowers with a white-spotted phenotype at high frequency. The spots were found at random locations in the petals and occurred in corresponding positions in both the upper and lower epidermis, indicating that the spots were non-clonal. The spotted phenotype was somatically stable and was inherited through meiosis. In white-spotted flower tissue, steady-state ChsA mRNA levels were down-regulated but rates of RNA transcription were unaffected, suggesting that the phenotype resulted from post-transcriptional gene **silencing** of the endogenous and episomal ChsA genes. Increases in both the frequency and extent of gene **silencing** in flowers correlated with increases in episome copy number in mature flowers, flower buds and young and fully expanded leaves. Relatively small increases in episome copy number (less than threefold) appeared sufficient to trigger the gene-**silenced** phenotype.

L5 ANSWER 15 OF 21 BIOSIS COPYRIGHT 2000 BIOSIS
ACCESSION NUMBER: 1998:228449 BIOSIS
DOCUMENT NUMBER: PREV199800228449
TITLE: Gene **silencing** from plant DNA carried by a **geminivirus**.
AUTHOR(S): Kjemtrup, Susanne; Sampson, Kim S.; Peele, Charles G.; Nguyen, Long V.; Conkling, Mark A.; Thompson, William F.; Robertson, Dominique (1)
CORPORATE SOURCE: (1) Dep. Botany, Box 7612, North Carolina State Univ., Raleigh, NC 27695-7612 USA
SOURCE: Plant Journal, (April, 1998) Vol. 14, No. 1, pp. 91-100. ISSN: 0960-7412.
DOCUMENT TYPE: Article
LANGUAGE: English
AB The **geminivirus** tomato golden mosaic virus (TGMV) replicates in nuclei and expresses genes from high copy number DNA episomes. The authors used TGMV as a vector to determine whether episomal DNA can cause **silencing** of homologous, chromosomal genes. Two markers were used to assess **silencing**: (1) the sulfur allele (su) of magnesium chelatase, an enzyme required for chlorophyll formation; and (2) the firefly luciferase gene (luc). Various portions of both marker genes were inserted into TGMV in place of the coat protein open-reading frame and the

constructs were introduced into intact plants using particle bombardment. When TGMV vectors carrying fragments of su (TGMV::su) were introduced into leaves of wild-type Nicotiana benthamiana, circular, yellow spots with an area of several hundred cells formed after 3-5 days. Systemic movement of TGMV::su subsequently produced variegated leaf and stem tissue. Fragments that caused **silencing** included a 786 bp 5' fragment of the 1392 bp su cDNA in sense and anti-sense orientation, and a 403 bp 3' fragment. TGMV::su-induced **silencing** was propagated through tissue culture, along with the viral episome, but was not retained through meiosis. Systemic downregulation of a constitutively expressed luciferase transgene in plants was achieved following infection with TGMV vectors carrying a 623 bp portion of luc in sense or anti-sense orientation. These results establish that homologous DNA sequences localized in nuclear episomes can modulate the expression of active chromosomal genes.

L5 ANSWER 16 OF 21 MEDLINE
ACCESSION NUMBER: 2000446841 MEDLINE
DOCUMENT NUMBER: 20452042
TITLE: Plant DNA viruses and gene **silencing**.
AUTHOR: Covey S N; Al-Kaff N S
CORPORATE SOURCE: John Innes Centre, Norwich Research Park, Colney, UK.. simon.covey@bbsrc.ac.uk
SOURCE: PLANT MOLECULAR BIOLOGY, (2000 Jun) 43 (2-3) 307-22. Ref: 71
Journal code: A6O. ISSN: 0167-4412.
PUB. COUNTRY: Netherlands
Journal; Article; (JOURNAL ARTICLE)
General Review; (REVIEW)
(REVIEW, TUTORIAL)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200012
ENTRY WEEK: 20001202
AB Gene **silencing** is a multifaceted phenomenon leading to propagative down-regulation of gene expression. Gene **silencing**, first observed in plants containing transgenes, can operate both at the transcriptional and post-transcriptional levels. **Silencing** effects can be triggered by nuclear transgenes and by cytoplasmic RNA viruses, and it can be propagated between these elements and endogenous plant genes that share sequence homology. Although some aspects of gene **silencing** are becoming better understood, little is yet known about the relationship between nuclear and cytoplasmic events. Plant DNA viruses-- both the ssDNA **geminiviruses** and the reverse-transcribing pararetroviruses-- have properties with the potential to initiate gene **silencing** in the nucleus and in the cytoplasm. Characteristics include production of multiple copies of viral DNA genomes in the nucleus, illegitimate integration of viral DNA into host chromosomes mimicking transgene transformation, and generation of abundant viral RNAs in the cytoplasm. Evidence is emerging that **geminiviruses** and plant pararetroviruses can interact with the gene **silencing** system either from introduced DNA constructs or during viral pathogenesis. Some observations suggest there are complex relationships between DNA viral activity, transcriptional and post-transcriptional gene **silencing** mechanisms. DNA viruses also have properties consistent with an ability to counteract the plant **silencing** response. In this article, features of plant DNA viruses are discussed in relation to gene **silencing** phenomena, and the prospects for understanding the interaction between nuclear and cytoplasmic **silencing** processes.

L5 ANSWER 17 OF 21 MEDLINE

ACCESSION NUMBER: 2000040691 MEDLINE
DOCUMENT NUMBER: 20040691
TITLE: Suppression of gene **silencing**: a general strategy used by diverse DNA and RNA viruses of plants.
AUTHOR: Voinnet O; Pinto Y M; Baulcombe D C
CORPORATE SOURCE: The Sainsbury Laboratory, John Innes Centre, Norwich NR4 7UH, United Kingdom.
SOURCE: PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA, (1999 Nov 23) 96 (24) 14147-52.

Journal code: PV3. ISSN: 0027-8424.
PUB. COUNTRY: United States
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals; Cancer Journals
ENTRY MONTH: 200003
ENTRY WEEK: 20000302

AB In transgenic and nontransgenic plants, viruses are both initiators and targets of a defense mechanism that is similar to posttranscriptional gene **silencing** (PTGS). Recently, it was found that potyviruses and cucumoviruses encode pathogenicity determinants that suppress this defense mechanism. Here, we test diverse virus types for the ability to suppress PTGS. Nicotiana benthamiana exhibiting PTGS of a green fluorescent protein transgene were infected with a range of unrelated viruses and various potato virus X vectors producing viral pathogenicity factors. Upon infection, suppression of PTGS was assessed in planta through reactivation of green fluorescence and confirmed by molecular analysis. These experiments led to the identification of three suppressors of PTGS and showed that suppression of PTGS is widely used as a counter-defense strategy by DNA and RNA viruses. However, the spatial pattern and degree of suppression varied extensively between viruses. At one extreme, there are viruses that suppress in all tissues of all infected leaves, whereas others are able to suppress only in the veins of new emerging leaves. This variation existed even between closely related members of the potexvirus group. Collectively, these results suggest that virus-encoded suppressors of gene **silencing** have distinct modes of action, are targeted against distinct components of the host gene-**silencing** machinery, and that there is dynamic evolution of the host and viral components associated with the gene-**silencing** mechanism.

L5 ANSWER 18 OF 21 SCISEARCH COPYRIGHT 2000 ISI (R)
ACCESSION NUMBER: 2000:683188 SCISEARCH
THE GENUINE ARTICLE: 350PQ
TITLE: Plant DNA viruses and gene **silencing**
AUTHOR: Covey S N (Reprint); AlKaff N S
CORPORATE SOURCE: JOHN INNES CTR PLANT SCI RES, NORWICH RES PK, NORWICH NR4 7UH, NORFOLK, ENGLAND (Reprint)
COUNTRY OF AUTHOR: ENGLAND
SOURCE: PLANT MOLECULAR BIOLOGY, (JUN 2000) Vol. 43, No. 2-3, pp. 307-322.
Publisher: KLUWER ACADEMIC PUBL, SPUIBOULEVARD 50, PO BOX 17, 3300 AA DORDRECHT, NETHERLANDS.
ISSN: 0167-4412.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE; AGRI
LANGUAGE: English
REFERENCE COUNT: 71

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB Gene **silencing** is a multifaceted phenomenon leading to propagative down-regulation of gene expression. Gene **silencing**, first observed in plants containing transgenes, can operate both at the

transcriptional and post-transcriptional levels. **Silencing** effects can be triggered by nuclear transgenes and by cytoplasmic RNA viruses, and it can be propagated between these elements and endogenous plant genes that share sequence homology. Although some aspects of gene **silencing** are becoming better understood, little is yet known about the relationship between nuclear and cytoplasmic events. Plant DNA viruses - both the ssDNA **geminiviruses** and the reverse-transcribing pararetroviruses - have properties with the potential to initiate gene **silencing** in the nucleus and in the cytoplasm. Characteristics include production of multiple copies of viral DNA genomes in the nucleus, illegitimate integration of viral DNA into host chromosomes mimicking transgene transformation, and generation of abundant viral RNAs in the cytoplasm. Evidence is emerging that **geminiviruses** and plant pararetroviruses can interact with the gene **silencing** system either from introduced DNA constructs or during viral pathogenesis. Some observations suggest there are complex relationships between DNA viral activity, transcriptional and post-transcriptional gene **silencing** mechanisms. DNA viruses also have properties consistent with an ability to counteract the plant **silencing** response. In this article, features of plant DNA viruses are discussed in relation to gene **silencing** phenomena, and the prospects for understanding the interaction between nuclear and cytoplasmic **silencing** processes.

L5 ANSWER 19 OF 21 SCISEARCH COPYRIGHT 2000 ISI (R)
ACCESSION NUMBER: 1999:922672 SCISEARCH
THE GENUINE ARTICLE: 259AY
TITLE: Suppression of gene **silencing**: A general strategy used by diverse DNA and RNA viruses of plants
AUTHOR: Voinnet O; Pinto Y M; Baulcombe D C (Reprint)
CORPORATE SOURCE: JOHN INNES CTR PLANT SCI RES, SAINSBURY LAB, NORWICH NR4 7UH, NORFOLK, ENGLAND (Reprint); JOHN INNES CTR PLANT SCI RES, SAINSBURY LAB, NORWICH NR4 7UH, NORFOLK, ENGLAND
COUNTRY OF AUTHOR: ENGLAND
SOURCE: PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA, (23 NOV 1999) Vol. 96, No. 24, pp. 14147-14152.
Publisher: NATL ACAD SCIENCES, 2101 CONSTITUTION AVE NW, WASHINGTON, DC 20418.
ISSN: 0027-8424.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: English
REFERENCE COUNT: 31

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB In transgenic and nontransgenic plants, viruses are both initiators and targets of a defense mechanism that is similar to posttranscriptional gene **silencing** (PTGS), Recently, it was found that potyviruses and cucumoviruses encode pathogenicity determinants that suppress this defense mechanism. Here, we test diverse virus types for the ability to suppress PTGS. Nicotiana benthamiana exhibiting PTGS of a green fluorescent protein transgene were infected with a range of unrelated Viruses and various potato virus X vectors producing viral pathogenicity factors, Upon infection, suppression of PTGS was assessed in planta through reactivation of green fluorescence and confirmed by molecular analysis, These experiments led to the identification of three suppressors of PTGS and showed that suppression of PTGS is widely used as a counter-defense strategy by DNA and RNA viruses. However, the spatial pattern and degree

of suppression Varied extensively between viruses. At one extreme, there are Viruses that suppress in all tissues of ail infected leaves, whereas others are able to suppress only in the veins of new emerging leaves, This Variation existed even between closely related members of the potexvirus group. Collectively, these results suggest that virus-encoded suppressors of gene **silencing** have distinct modes of action, are targeted against distinct components of the host gene-**silencing** machinery, and that there is dynamic evolution of the host and viral components associated with the gene-**silencing** mechanism.

L5 ANSWER 20 OF 21 SCISEARCH COPYRIGHT 2000 ISI (R)
ACCESSION NUMBER: 1998:723690 SCISEARCH
THE GENUINE ARTICLE: 120DK
TITLE: Post-transcriptional **silencing** of chalcone synthase in petunia using a **geminivirus**-based episomal vector
AUTHOR: Atkinson R G (Reprint); Bieleski L R F; Gleave A P; **Janssen B J; Morris B A M**
CORPORATE SOURCE: HORT & FOOD RES INST NEW ZEALAND LTD, GENE TRANSFER & EXPRESS GRP, PRIVATE BAG 92169, AUCKLAND, NEW ZEALAND (Reprint)
COUNTRY OF AUTHOR: NEW ZEALAND
SOURCE: PLANT JOURNAL, (SEP 1998) Vol. 15, No. 5, pp. 593-604. Publisher: BLACKWELL SCIENCE LTD, P O BOX 88, OSNEY MEAD, OXFORD OX2 0NE, OXON, ENGLAND. ISSN: 0960-7412.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE; AGRI
LANGUAGE: English
REFERENCE COUNT: 45

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB A vector that produces DNA replicons (multicopy plant episomes) was constructed using elements of the **geminivirus** tobacco yellow dwarf virus (TYDV). All plant cells contain an integrated chromosomal T-DNA copy of the TYDV elements that provides a template for the production of episomes in the cell nucleus. Transgenic Petunia hybrida plants containing a CaMV 35S promoter-driven chalcone synthase A (ChsA) gene cloned into the episomal vector produced flowers with a white-spotted phenotype at high frequency. The spots were found at random locations in the petals and occurred in corresponding positions in both the upper and lower epidermis, indicating that the spots were non-clonal. The spotted phenotype was somatically stable and was inherited through meiosis. In white-spotted flower tissue, steady-state ChsA mRNA levels were downregulated but rates of RNA transcription were unaffected, suggesting that the phenotype resulted from post-transcriptional gene **silencing** of the endogenous and episomal ChsA genes. Increases in both the frequency and extent of gene **silencing** in flowers correlated with increases in episome copy number in mature flowers, flower buds and young and fully expanded leaves. Relatively small increases in episome copy number (less than threefold) appeared sufficient to trigger the gene-**silenced** phenotype.

L5 ANSWER 21 OF 21 SCISEARCH COPYRIGHT 2000 ISI (R)
ACCESSION NUMBER: 1998:342959 SCISEARCH
THE GENUINE ARTICLE: ZK405
TITLE: Gene **silencing** from plant DNA carried by a **Geminivirus**
AUTHOR: Kjemtrup S; Sampson K S; Peele C G; Nguyen L V; Conkling M A; Thompson W F; Robertson D (Reprint)
CORPORATE SOURCE: N CAROLINA STATE UNIV, DEPT BOT, BOX 7612, RALEIGH, NC 27695 (Reprint); N CAROLINA STATE UNIV, DEPT BOT, RALEIGH,

NC 27695; N CAROLINA STATE UNIV, DEPT GENET, RALEIGH, NC 27695
COUNTRY OF AUTHOR: USA
SOURCE: PLANT JOURNAL, (APR 1998) Vol. 14, No. 1, pp. 91-100.
Publisher: BLACKWELL SCIENCE LTD, P O BOX 88, OSNEY MEAD, OXFORD, OXON, ENGLAND OX2 0NE.
ISSN: 0960-7412.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE; AGRI
LANGUAGE: English
REFERENCE COUNT: 47

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB The **geminivirus** tomato golden mosaic virus (TGMV) replicates in nuclei and expresses genes from high copy number DNA episomes. The authors used TGMV as a vector to determine whether episomal DNA can cause **silencing** of homologous, chromosomal genes. Two markers were used to assess **silencing**: (1) the sulfur allele (su) Of magnesium chelatase, an enzyme required for chlorophyll formation; and (2) the firefly luciferase gene (luc). Various portions of both marker genes were inserted into TGMV in place of the coat protein open-reading frame and the constructs were introduced into intact plants using particle bombardment. When TGMV vectors carrying fragments of su (TGMV::su) were introduced into leaves of wild-type Nicotiana benthamiana, circular, yellow spots with an area of several hundred cells formed after 3-5 days. Systemic movement of TGMV::su subsequently produced variegated leaf and stem tissue. Fragments that caused **silencing** included a 786 bp 5' fragment of the 1392 bp su cDNA in sense and anti-sense orientation, and a 403 bp 3' fragment. TGMV::su-induced **silencing** was propagated through tissue culture, along with the viral episome, but was not retained through meiosis. Systemic downregulation of a constitutively expressed luciferase transgene in plants was achieved following infection with TGMV vectors carrying a 623 bp portion of luc in sense or anti-sense orientation. These results establish that homologous DNA sequences localized in nuclear episomes can modulate the expression of active chromosomal genes.